

REMARKS

Claims 1 – 21 are pending in this application.

Claim 22 has been canceled.

Claims 1 – 22 have been rejected.

Claim Amendments

Claim 22 has been canceled, without prejudice.

Double Patenting

Claim 22 has been rejected under 35 U.S.C. § 101 as claiming the same invention as that of claim 16 of prior U.S. Patent No. 6,505,077 and has been rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 16 of prior U.S. Patent No. 6,505,077. With the cancellation of claim 22, this rejection has been rendered moot.

Rejections of Claims 1 – 17 and 19 - 22 under 35 U.S.C. § 103

Claims 1 – 17 and 19 - 22 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,154,677 (“Leysieffer ‘677”). These rejections are respectfully traversed.

Leysieffer ‘677 discloses an implantable medical device with a charging current feed arrangement having at least one receiving coil into which energy can be fed electromagnetically via a charging device located outside the body. The receiving coil disclosed in Leysieffer ‘677 is carried in various locations and configurations but is always offset with respect to a central location of the housing of the implantable medical device. Leysieffer ‘677 does not disclose, nor suggest, any arrangement or configuration in which the receiving coil is centrally located on the proximal face of the housing of the implantable medical device.

In contrast, independent claim 1 clearly and explicitly requires a “recharging coil centrally located and substantially carried on the housing proximal face” of the housing of the

implantable medical device (claim 1, lines 9 – 10). Similarly, independent claim 21 clearly and explicitly requires “means for attaching the means for recharging to a position centrally located and substantially carried on the housing proximal face” (claim 21, lines 11 – 12).

None of the embodiments of Leisieffer '677 show, disclose or suggest a recharge coil “centrally located and substantially carried on the housing proximal face” of the implantable medical device and “electrically coupled through which the housing electrical feedthrough to the electronics and rechargeable power source”, as required in claim 1, lines 9 – 11 of the present invention, with similar language in claim 21, lines 9 – 12 (without the electrical feedthrough limitation).

The Examiner essentially admits as much saying “absent any teaching or unexpected results, merely changing the location of the coil on the exterior face of the housing to a central location would be an obvious design choice” (Office Action mailed February 26, 2008, page 4, lines 13 – 15).

However, centrally locating the recharging coil on a proximal face of the house actually does produce an advantageous result not anticipated, shown nor suggested in the cited art. It is important in transcutaneous energy transmission during recharging operations that the external primary coil and the internal recharging coil (secondary coil) be as closely aligned as is reasonably possible. Close alignment usually results in the most efficient energy transfer between the external coil and the internal coil. Efficient energy transfer is important not only to achieve the shortest possible recharge times but also to avoid or reduce significant side effects of recharging which may include the inconvenience of the patient and the possibility of a reduction in the power output of the external coil in order to avoid excessive tissue heating which would further increase recharging times and further inconvenience the patient. Since the recharging coil is implanted, it is sometimes difficult to determine the exact location to place or locate the external coil so that the external coil is most closely aligned with the secondary coil. This is because the internal recharging coil can not be directly observed by the patient. An implanted medical device will typically result in a bump or slight protrusion of the skin of the patient at the site of implantation. Such bump or slight protrusion may be observed by the patient, perhaps visually but more often tactilely. Thus, the patient may be able to reasonably establish the location of the implanted device. However, unless the

recharging coil is centrally located with respect to the proximal face of the implanted device, the patient would still not know the lateral location of the internal recharging coil, and hence be unable to know where to place the external coil in optimal alignment with the internal recharging coil. If however, the recharging coil is centrally aligned with the proximal face of the implanted device and since the location of the implanted device can be physically determined, e.g., tactiley, then the patient will be able to accurately align the external coil with the internal recharging coil simply by positioning the external coil in alignment with the physically determined position of the implanted device. Hence, centrally locating the recharging coil may allow the patient to achieve a much closer alignment of the external charging coil and the internal recharging coil. If the internal recharging coil is not centrally located with respect to the proximal face of the implanted device, the location most easily determined by the patient, then it would be much more difficult for the patient to properly or optimally locate or position the external charging coil which could result in less efficient charging and greater inconvenience. Even if the user were know that the recharging coil was located on one side the implanted device (and this point is not conceded because it has been shown nor discussed in the art), it would seem to be impossible for the user/patient to know on which side of the device to located the external coil as the resulting proximal face disclosed in Leysieffer '677 is, essentially, flat. This would usually, in the absence of blind luck, result in a non-optimal recharge session when the Leysieffer '677 device is used.

None of the cited art discloses such a central location, provides any suggestion of such a central location nor provides any glimpse of the importance of such a central location. Thus, it is respectfully submitted that the central location of the recharging coil may be critical to establishing and/or maintaining efficiency of energy transfer and directly leads to the unexpected result of providing a higher efficiency of energy transfer. This result is not shown nor suggested in Leysieffer '677 nor in any of the other cited art.

Leysieffer '677 actually teaches away from locating a recharging coil centrally on a proximal face of an implanted device by specifically disclosing a housing having a higher section (91) which is designed to hold the battery (90) and a reduced-height section offset to one side of the implanted device designed to hold electronic modules (74 and 76). Receiving coil (106) is attached in the space formed by the housing gradation, which is necessarily offset

from the implanted device (see, for example, column 5, lines 28 – 42 and Figures 5 and 6). Leysieffer ‘677 specifically teaches the benefits of offsetting the coil to one side of the proximal face of the device and, therefore, teaches away from the presently claimed invention.

As Leysieffer ‘677 fails to show, disclose or suggest all of the limitations of claims 1 and 21, it is respectfully submitted that the rejections of claims 1 and 21 under 35 U.S.C. § 103(a) as being obvious over Leysieffer ‘677 are improper and should be withdrawn.

Claims 2 – 17 and 19 – 20 all contain additionally patentable subject matter. Claims 2 – 17 and 19 – 20 are all dependent on claim 1, and as such incorporate all of the limitations of claim 1. Because the rejection of claim 1 under 35 U.S.C. 103(a) as being obvious over Leysieffer ‘677 is improper, it is respectfully submitted that the rejections of claims 2 – 17 and 19 – 20 under 35 U.S.C. 103(a) as being obvious over Leysieffer ‘677 are likewise improper and should be withdrawn.

Claim 22 has been canceled and, hence, the rejection of claim 22 has been rendered moot.

Rejection of Claim 18 under 35 U.S.C. § 103

Claim 18 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,154,677 (“Leysieffer ‘677”) in view of U.S. Patent No. 5,279,292 (“Baumann et al ‘292”). These rejections are respectfully traversed.

As noted above, Leysieffer ‘677 does not disclose the feature of centrally locating the recharging coil with respect to the proximal face of the implantable medical device. Baumann et al ‘292 has been cited solely for the teaching of a telemetry coil carried in the interior cavity of the housing of the implantable medical device. Baumann et al ‘292 does not show, disclose nor suggest a recharge coil “centrally located and substantially carried on the housing proximal face” of the implantable medical device. All of the arguments presented above with respect to Leysieffer ‘677 apply equally well to Baumann et al ‘292 and are incorporated here by reference.

As neither Leysieffer '677 nor Baumann et al '292, nor any combination of Leysieffer '677 and Baumann et al '292, show, disclose or suggest all of the limitations of claim 18, it is respectfully submitted that the rejection of claim 18 under 35 U.S.C. § 103(a) as being obvious over Leysieffer '677 in view of Baumann et al '292 is improper and should be withdrawn.

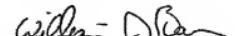
Summary

In view of the amendments made and the arguments presented, claims 1 – 21 should be allowable, this application should be in condition for allowance and a notice to that effect is earnestly solicited.

Respectfully Submitted,

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